

GOLUTSOVA, V. A.

USSR/chemistry - Synthetic Rubber 1 Jun 52

"Thermal Cleavage of Polyisobutene," V. A.  
Golutsova

"Dok Ak Nauk SSSR" Vol 84, No 4, pp 701-703

Author states that heating polyisobutene in either a glass or iron vessel at 270-290° results in a cleavage of polymer to smaller units. In the 1st 2 hrs of heating, the mol wt is reduced from 77,000 to 15,000. Thereafter, the decrease in mol wt is gradual. The cleavage apparently takes place in the central

232T2

part of the mol. The yield of volatile matter is 0.9% of the wt of the polymer. Presented by Acad A. V. Topchiev.

232T2

KARZHAVIN, Yu.A.; CHUVILO, I.V.; KIRILOV, S.S.; INKIN, V.D.; GOLUTVIN, I.A.;  
NEUSTROYEV, V.D.; STEPANOV, V.D.; TULAYEV, B.P.; KOLESOV, I.V.;  
ALMAZOV, V.Ya.; PROKOF'YEV, Yu.P.; SHINAGL, I.

Device for automatic measurement of the coordinates of charged  
particle tracks recorded on bubble chamber photographs. Prib.  
i tekhn. eksp. 8 no.5:54-60 S-0 '63. (MIRA 16:12)

1. Ob'yedinennyy institut yadernykh issledovaniy.

ACCESSION NR: AP4018373

S/0120/64/000/001/0097/0100

AUTHOR: Golutvin, I. A.; Inkin, V. D.; Karzhavin, Yu. A.; Mal'tsev, E. I.;  
Neustroyev, V. D.; Stepanov, V. D.; Chan, I.

TITLE: Measuring multiple-scattering parameters from the pattern of tracks in  
a xenon chamber

SOURCE: Pribery\* i tekhnika eksperimenta, no. 1, 1964, 97-100

TOPIC TAGS: multiple scattering, multiple scattering measurement, ionization  
chamber, xenon ionization chamber, BMI microscope, scattering measurement  
BMI microscope

ABSTRACT: A BMI microscope was equipped with a step-feed mechanism and a  
translation sensor based on the diffraction-grating principle. Electronic equip-  
ment includes a data-processing unit, a binary reversible counter, a  
transcription-to-punch-tape control, and a keyboard for introducing additional

Cord 1/52

ACCESSION NR: AP4018373

data into the tape. The instrument, whose functional diagram is shown in Enclosure 1, permits 4-5 times quicker data processing. The instrument has been in actual operation since March, 1962; its output agrees with the manual-processing output to within 3%. "The authors wish to thank I. V. Chuvilo for a few valuable hints and comments made by him during the development of this instrument." Orig. art. has: 10 figures.

ASSOCIATION: Ob'yedinenny\*y institut yaderny\*kh issledovaniy (Joint Nuclear Research Institute)

SUBMITTED: 13Mar63

DATE ACQ: 18Mar64

ENCL: 01

SUB CODE: NS

NO REF SOV: 002

OTHER: 001

Card 2/32

"APPROVED FOR RELEASE: 06/13/2000

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ASSOCIATION OF THE UNITED STATES OF AMERICA

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000515920014-4"



60171 VIM, N G.

~~GOLUBVIN, N. G.~~ gornyy inzh.

Data on manifestations of rock pressure during workings in thick,  
flat seams in the Tom'-Usinsk deposits mined by inclined slicings  
with roof caving. Ugol' 33 no.2:18-19 F '58. (MIRA 11:2)  
(Coal mines and mining) (Subsidence (Earth movement))

GOLUTVIN, V. A., Cand Tech Sci -- (diss) "Study of Basic  
~~Elements~~ *(gently sloping)* Elements of the System of Exploitation of Thick Strata ~~with~~  
~~Slanting Dip~~ *as a function* by Inclined Layers with Crumbling Roof ~~Depending~~  
~~upon~~ *off* Manifestations of Mountain Pressure." Mos, 1957. 14 pp  
(Min of Higher Education USSR, Mos Mining Inst im I. V. Stalin),  
120 copies (KL, 49-57, 112)

- 31 -

GOLUTVIN, V.A., aspirant

Comparing alternatives for consecutive mining of thick seam layers  
at the Tom'-Usa mine no. 1-2. Nauch. trudy MGI no.18:79-96 '57.  
(MIRA 11:9)

(Kuznetsk Basin--Coal mines and mining)

**GOLUTVIN, Y.A.**

Readers' response to I.V. Flavel'skii's article "Determining the length of the stope area and that of the panel strike in mining sloping Karaganda Basin seams" (Ugol' no. 1, 1956).  
Ugol' 32 no.4:40 Ap '57. (MLRA 10:5)

1. Moskovskiy gornyy institut.  
(Karaganda Basin--Mine examination)  
(Pavel'skii, I.V.)

GOLUTVIN, V.A., kand.tekhn.nauk

Relative disposition of slice layers and the cost of their  
maintenance in mining thick flat seams. Izv.vys.ucheb.zav.;  
gor.shur. no.3:47-54 '59. (MIRA 13:4)

1. Permskiy gornyy institut. Rekomandovana kafedroy razrabotki  
mestorozhdeniy poleznykh iskopayemykh.  
(Mining engineering)

GOLUTVIN, V.A.

"Opening up and mining systems for coal deposits" by A.P. Kiliachkev.  
Ugol' 34 no.1:63-64 Ja '59. (MIRA 12:1)

1. Permskiy gornyy institut.  
(Coal mines and mining)

GOLUTVIN, Vasilii Andreyevich; POLESIN, Ya.L., otv. red.; YEROKHIN,  
G.M., red, izd-va; IL'INSKAYA, G.M., tekhn. red.

[Labor safety in coal mines] Bezopasnost' truda na ugol'nykh  
shakhtakh. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po gor-  
nomu delu, 1961. 85 p. (MIRA 15:2)  
(Coal mines and mining--Safety measures)

NOVIKOV, M.I., gornyy inzh.; GOLUTVIN, V.A., kand.tekhn.pauk

Use of the chamber-and-pillar in the Mine No.11 of the Noril'sk  
deposit. Ugol' 36 no.3:7-10 Mr '61. (MIRA 14:5)  
(Tunguska Basin--Coal mines and mining)



GOLUTVIN, V.A., kand.tekhn.nauk

Efficient launder shape for a belt and an increase in the productivity of belt conveyors. Vop. rud. transp. no.7:81-86 '63. (MIRA 16:9)

1. Permskiy politekhnicheskii institut.  
(Conveying machinery)

GOINTVIN, V.A., dotsent

Efficient geometric parameters of roller bearings on belt conveyers. Izv.vys.ucheb.zav.; gor. zhur. 6 no. 12:120-123 '63.  
(MIRA 17:5)

USSR / Forestry. Forest Crops.

K-3

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24895.

Author : Konovalov, N. A.; Golutvin, V. S.

Inst : Not given.

Title : The Conditions of Forest Vegetation of the Ural  
Educational-Experimental Forest Station and Types  
of Forest Trees.

Orig Pub: Sb. tr. po lesn. kh-vu. Ural'skiy lesotekhn. in-t,  
1956, vyp. 4, 3-19.

Abstract: The types of the forest vegetation conditions are  
briefly described and types of forest cultures in  
the Ural educational-experimental leskhoz recommen-  
ded. As a basis of the unification of types of  
the conditions of forest vegetation, conditions  
of the moistening and richness of the soil are put  
into 4 groups. The following type groups were

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USSR / Forestry. Forest Crops.

K-3

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24895.

Abstract: singled out: 1) elevated sites with dry poor soils; 2) gently-sloping elevations and slopes with fresh, medium-rich soils; 3) the lower parts of the slopes with fresh, rich soils; 4) gentle slopes or flat sites with fresh or damp comparatively rich turf-podsolic soils. The first group is adapted to moss or lichen pine forests (along rocky exposures), the second - the green pouched pine forests (red billberry, berry and billberry), the third - the mixed pine forests (with linden), and the fourth - herbaceous pine forests (reed bentgrass - mixed grasses and eagle). An assortment of shrubs is recommended, which can be utilized both in produc-

Card 2/3

USSR / Forestry. Forest Crops.

K-3

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24895.

Abstract: ing continuous cultures on the clearings and in the reconstruction of the saplings not usable until they grow up. The pine, the Sukachev larch and the Siberian larch are distinguished as the main stocks. The birch, in case of the depression of its main stock, should be taken out. With the producing of continuous cultures it is recommended to preserve the young birch trees as a soil-improving stock. In the tables quoted, the types of the forest cultures, depending on types of the conditions of forest vegetation, are described.

Card 3/3

36

GOLUTVIN, V.S.

Results of airplane seeding on burnt-over and cutover areas of the western slope of the Central Urals. Trudy Inst. biol. UFAN SSSR no.16:159-162 '60. (MIRA 13:10)

1. Ural'skiy lesotekhnicheskii institut.  
(Ural Mountains--Afforestation)

26

**B**

**New Compounds of Sulfur, Selenium, and Iodine.** (In Russian.) A. F. Kapustinakii and Yu. M. Golytrin. *Zhurnal Obshchei Khimii* (Journal of General Chemistry), v. 17 (79), Nov. 1947, p. 2010-2018.

Surface tensions and densities in the systems S-I-CS<sub>2</sub>, Se-I-CS<sub>2</sub>, and S-Se-CS<sub>2</sub> were determined. Results are tabulated and charted. The existence of S<sub>2</sub>I<sub>2</sub>, S<sub>2</sub>I<sub>4</sub>, SI<sub>2</sub>, SI<sub>4</sub>, Sel<sub>2</sub>, Sel<sub>4</sub>, and Se<sub>2</sub>S was established. All of them appear to be quite unstable. 18 ref.

**ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION**

140000 1410 1420 1430 1440 1450 1460 1470 1480 1490		150000 1510 1520 1530 1540 1550 1560 1570 1580 1590		160000 1610 1620 1630 1640 1650 1660 1670 1680 1690		170000 1710 1720 1730 1740 1750 1760 1770 1780 1790		180000 1810 1820 1830 1840 1850 1860 1870 1880 1890		190000 1910 1920 1930 1940 1950 1960 1970 1980 1990																																																	
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GOLUTVIN, YU. M.

Cand Chem Sci

Dissertation: "Thermochemistry of the Compounds of Iron and Aluminum with the Elements of Sixth Group of the Mendeleev Periodic System." 8/12/50

Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleev.

SO Vecheryaya Moskva  
Sum 71



Thermochemistry and the structure of atoms. IV. The rule of thermochemical logarithmicity, and the role of the dimensions and the character of the chemical bonds. A. F. Kapustinakii and Yu. M. Golovinski (Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1951, 3-12; cf. C.A. 44, 9700f. (1) Deviations from the rule that in compounds of identical type, along groups or periods of the periodic system, the heat of formation per g. equiv.,  $-\Delta H^\circ/W$ , in the standard state, is a linear function of  $\log Z$  (the at. no. of the varying element), are correlated with the ratio  $\rho = R_i/R_a$ , i.e. the ratio between the univalent radius  $R_i$  and the cryst. radius  $R_a$ . The parameter  $\rho$  expresses the shortening of the bond as a result of a superposition of a partially ionic bond on the covalent link. In any series with a const. anion, the variation of  $-\Delta H^\circ/W$  as a function of  $\log Z$  (of the cation) follows the same straight line only as long as either  $\rho_a > \rho_i$  or  $\rho_a < \rho_i$  throughout the series; the subscripts  $a$  and  $i$  refer to anion and cation, resp. In the range where  $\rho_a > \rho_i$ ,  $-\Delta H^\circ/W$  is inversely proportional, and in the range where

$\rho_a < \rho_i$ , it is directly proportional to  $R_a$ . An inversion takes place at  $\rho_a = \rho_i$ ; if the series crosses that point, the straight line is broken, and the slope changes its sign. Van Arkel's rule (C.A. 43, 9331i) that  $-\Delta H^\circ/W$  increases with  $R_a$  (at const. anion) is true only as long as  $\rho_a > \rho_i$ . These relations are illustrated by the series Be, Ni, Mg, Ni, Cu, Ni, Sn, Ni, Ba, Ni, where  $\rho_a > \rho_i$  throughout, and, conversely,  $-\Delta H^\circ/W$  as a function of  $\log Z_i$  is a single falling straight line; in the series BeCl, MgCl, CaCl, SrCl, BaCl,  $\rho_a < \rho_i$  throughout, and the plot is a single rising line. In the sulfide series, BeS, MgS, CaS, SrS, BaS, there is an inversion,  $\rho_a = \rho_i$ , at Ca; consequently, the line is broken at CaS and consists of one ascending branch from BeS to CaS and a descending branch from CaS to BaS. An anomalous deviation from this rule is encountered in subgroups. Thus, in the series MgCl, ZnCl, CdCl, HgCl, the plot is a falling straight line, despite  $\rho_i > \rho_a$ , and the same behavior is shown by the series MgS, ZnS, CdS, HgS, where  $\rho_i > \rho_a$ . The subgroup anomaly disappears, however, in series along the rows of the periodic system. In NaCl, MgCl, AlCl, SiCl, PCl,  $\rho_a > \rho_i$ , and the plot is, as expected, a single straight line. In the series RbCl, SrCl, YbCl, ZrCl, NbCl, MoCl, there is an inversion,  $\rho_a = \rho_i$ , at Sr, and the plot consists of an ascending branch RbCl - SrCl ( $\rho_a < \rho_i$ ) and a descending

branch  $\text{V}_2\text{O}_5 - \text{MoO}_3$  ( $\rho_s > \rho_a$ ). Exactly the same behavior, with an inversion at Zn, is found in the subgroup element series  $\text{Cu}_2\text{O}$ ,  $\text{ZnO}$ ,  $\text{Ga}_2\text{O}_3$ ,  $\text{GeO}_2$ ,  $\text{As}_2\text{O}_3$ ,  $\text{SeO}_2$ . (2) Pauling's relation between the heat of formation  $-\Delta H$  of a gaseous compound,  $\text{AB}$ , from gaseous atoms,  $\text{A}_2$  and  $\text{B}_2$ ,  $-\Delta H = K_w(X_A - X_B)^2 - C$  (where  $X$  = electronegativity,  $w$  = no. of bonds,  $K$  = conversion coeff. from e.v. to kcal.,  $C$  = correction for the dissoc. energies of  $\text{O}_2$  and  $\text{N}_2$ ), as well as K.'s (C.A. 43, 1950) expression of the lattice energy  $U$  in terms of the crystallochem. electronegativities  $\epsilon$ , of the form  $U = w(\epsilon_A - \epsilon_B)^2$ , immediately suggest a linear relation between  $\sqrt{-\Delta H^\circ/W}$  and  $(\rho_s - \rho_a)$ , since  $\rho$  is directly related to the electronegativities. This linearity was confirmed in all instances, as illustrated by the series  $\text{Ba}_3\text{N}_2$ ,  $\text{Sr}_3\text{N}_2$ ,  $\text{Ca}_3\text{N}_2$ ,  $\text{Mg}_3\text{N}_2$ ,  $\text{Be}_3\text{N}_2$  (single ascending line),  $\text{BaCl}_2$ ,  $\text{SrCl}_2$ ,  $\text{CaCl}_2$ ,  $\text{MgCl}_2$ ,  $\text{BeCl}_2$  (single descending line), or  $\text{BaS}$ ,  $\text{SrS}$  (ascending branch),  $\text{CaS}$  (inversion),  $\text{MgS}$ ,  $\text{BeS}$  (descending branch). (3) The assumption that for all univalent ions  $\rho = 1$  is not borne out by the plot  $(-\Delta H^\circ/W, \log Z)$  for the series  $\text{MgF}_2$ ,  $\text{CaF}_2$ ,  $\text{SrF}_2$ ,  $\text{BaF}_2$ , showing an inversion at  $\text{CaF}_2$ , and giving for  $\text{F}^-$ ,  $1.23 > \rho > 1.10$ . Exact values of  $\rho$  for univalent ions were

obtained from  $\sqrt{-\Delta H^\circ/W}$ ,  $(\rho_s - \rho_a)$  plots along rows of the periodic system, for salts of anions exhibiting no inversion; the final values of  $\rho$  are,  $\text{F}^-$  1.190,  $\text{Na}^+$  1.184,  $\text{K}^+$  1.163,  $\text{Rb}^+$  1.137,  $\text{Cs}^+$  1.128,  $\text{Cu}^+$  1.070,  $\text{Ag}^+$  1.070,  $\text{Au}^+$  1.060,  $\text{H}^+$  1.190,  $\text{Cl}^-$  1.126,  $\text{Br}^-$  1.111,  $\text{I}^-$  1.080. The accuracy of these figures is not higher than 0.01. For  $\text{Br}^-$ , the corrected value of  $\rho = 2.10$  (instead of 1.83). (4) From the  $\sqrt{-\Delta H^\circ/W}$ ,  $(\rho_s - \rho_a)$  plots for the alkali metal fluorides, the correct heat of formation of  $\text{NaF}$ ,  $\Delta H_{\text{NaF}}$  = -144 kcal./mole, instead of -135.95. (5) In series with a common cation, and variable anion, plots of  $\sqrt{-\Delta H^\circ/W}$  as a function of  $(\rho_s - \rho_a)$  are single falling straight lines, if one takes for  $\Delta H^\circ$  the heat of formation of the cryst. compd. from the cryst. metal and the gaseous nonmetal. This is illustrated by the series  $\text{ZnF}_2$ ,  $\text{ZnCl}_2$ ,  $\text{ZnBr}_2$ ,  $\text{ZnI}_2$ ;  $\text{ZnO}$ ,  $\text{ZnS}$ ,  $\text{ZnSe}$ ,  $\text{ZnTe}$ ;  $\text{CdO}$ ,  $\text{CdS}$ ,  $\text{CdSe}$ ,  $\text{CdTe}$ . As a function of  $\rho_a$ ,  $\sqrt{-\Delta H^\circ/W}$  is a rising straight line, as illustrated by the sequence  $\text{PbTe}$ ,  $\text{PbSe}$ ,  $\text{PbS}$ ,  $\text{PbO}$ . Van Arkel's contention of an occasional occurrence of a fall of  $\Delta H^\circ/W$  from the alkalis to the alkalis, is considered to be based on insufficiently substantiated data. N. 1950

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
COMMON ELEMENTS										COMMON VARIANTS INDEX									
<p><b>B</b></p> <p><b>8136* Thermochemistry and Structure of Atoms. 5. Heat of Formation of Compounds of Aluminum With Elements of Group VI of D. I. Mendeleev's Periodic System. (In Russian.) A. F. Kapustinskii and Yu. M. Golitsyn. <i>Izvestiya Akademii Nauk SSSR</i> (Bulletin of the Academy of Sciences of the USSR), Section of Chemical Sciences, Mar.-Apr. 1951, p. 192-200.</b></p> <p>Describes microbomb experiments on direct determination of heats of formation of Al sulfide, selenide, and telluride. Results are compared with the positions of O, S, Se, and Te in the periodic table. Data are tabulated and charted.</p>										<p>26</p>									
<p>ASR-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>										<p>8-27-51</p>									
<p>FROM SYMBOL</p>										<p>TO SYMBOL</p>									
<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>										<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>									

GOLUTVIN, YU. M.

USSR/Chemistry - Iron Sulfide Jun 51

"Method of Limiting Heats. I. Heat of Formation of Iron Sulfide," A. F. Kapustinskiy, Yu. M. Golutvin, Chem-Technol Inst Imeni D. I. Mendeleev, Moscow

"Zhur Fiz Khim" Vol XXV, No 6, pp 719-728

Direct calorimetric measurements on reacting Fe-S system showed formation of (a) higher Fe sulfides (as well as FeS) possessing strong influence on heat effect and (b) finite region of solid solns of S in FeS of anomalous type with higher heat of formation mole than pure FeS. Developed new method

206714

USSR/Chemistry - Iron Sulfide (Contd) Jun 51

of "limiting heats" for detg heats of formation of metal sulfides. Discussed further refinements in methods for study of Fe-S system. Detd heat of formation of FeS.

206714

USSR/Chemistry - Iron Selenide and  
Telluride Jun 51

"Method of Limiting Heats. II. Heat of Formation  
of Iron Selenide," A. F. Kapustinskii, Yu. M. Go-  
lubev, Chem-Technol Inst Imeni D. I. Mendeleev,  
Moscow

"Zhur Fiz Khim" Vol XXV, No 6, pp 729-731

Direct calorimetric measurements on reacting Fe-Se  
system and use of method of "limiting heats" de-  
scribed in preceding paper (Ibid. pp 719-728) made  
possible detn of heat of formation of FeSe. Use of  
previously described linear dependence of heat of  
formation on ratio between monovalent and crystal

206715

USSR/Chemistry - Iron Selenide and  
Telluride (Contd) Jun 51

redit made possible comparison of FeO, FeS, FeSe,  
and FeTe, resulting in correction of published  
value for heat of formation of FeTe.

206715

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Golutvin, Yu. M.

USSR/ Chemistry - Inorganic

Card 1/2 : Pub. 40 - 3/22

Authors : Golutvin, Yu. M.

Title : About thermodynamic stability of various structures of binary inorganic-crystals

Periodical : Izv. AN SSSR. Otd. khim. nauk 5, 781-787, Sep-Oct 1953

Abstract : The effect of the ratio between the thermodynamic values of the cation and anion on the stability of binary inorganic-compounds and the type of chemical bond in these compounds was investigated. It was found that most stable compounds of normal-valent formula and predominant ion bond can exist only for cations and anions with close thermodynamic values. More positive thermodynamic values lead to unstable structures. Stable structures for such binary compounds are these in which the

Izv. AN SSSR. Otd. khim. nauk 5, 781-787, Sep-Oct 1954. (Additional card)

Card 2/2      Pub. 40 - 3/22

Abstract      : cation is in the lower-valent stages. Approximate intervals at which the thermodynamic values experience certain changes are explained. Eleven references: 5-USSR; 4-German and 2-USA (1926-1953). Tables; graphs.

Institution    : East Siberian Branch of Acad. of Sc. USSR, Mining-Metallurgical Institute, Irkutsk

Submitted     : November 22, 1952



GOLUTVIN, Yu. M.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.  
Physicochemical analysis. Phase transitions

B-8

Abs Jour : Referat Zhurn - Khimiya, No 4, 1957, 11139

Author : Golutvin Yu.M.

Title : On Heat of Formation in Binary Inorganic Systems

Orig Pub : Zh. fiz. khimii, 1956, 30, No 1, 232-234

Abstract : It was found that for binary crystalline compounds  $\Delta H_{298}^0 / \sum W \approx a - b \lg W_k$  (1), where  $\Delta H_{298}^0 / \sum W$  -- standard heat of formation of the compound from monatomic gaseous elements, referring to gram-equivalent,  $W$  -- valency of cation,  $a$  and  $b$  -- constants for a series of compounds of given element of different valency. Formula (1) is illustrated by tabulated and graphic data for various oxides, chlorides, bromides of Al, and also gaseous oxides of nitrogen. Notwithstanding wide variation of chemical bond, compounds under consideration are stoichiometric and definite valency can be attributed to the cations; on transition to compounds of indefinite valency (for example, carbides, nitrides etc.) formula (1) becomes inapplicable.

Card 1/1

*Golutrin, Yu. M.*

USSR / Solid State Physics / Structural Crystallography

E-4

Abs Jour : Ref Zhur - Fizika, No.5, 1957 No. 11672

Author : Golutrin, Yu. M.

Inst : Institute of Metallurgy, Academy of Sciences, USSR.

Title : Heat of Formation of Titanium Silicides.

Orig Pub : Zh. fiz. khimii, 1956, 30, No. 10, 2251 - 2259

Abstract : By using the method of combustion in a bomb, the author has determined the heat of combustion of Ti, of Si, and of titanium silicides,  $\text{TiSi}_2$ ,  $\text{TiSi}$ , and  $\text{Ti}_5\text{Si}_3$ . On the basis of the data obtained, the heat of formation of silicides from the elements are calculated as  $\Delta H_{298}^0 = \text{TiSi}_2 = -42.9 \pm 4.5$ ;  $\Delta H_{298}^0 = \text{TiSi} = 39.2 \pm 3.0$ , and  $\Delta H_{298}^0 = \text{Ti}_5\text{Si}_3 = 147. \pm 12$  kcal/mole.

Card: 1/1

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000515920014-4"

137-58-6-11967

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 111 (USSR)

AUTHORS: ~~Golutyin, Yu.M.~~, Kryukova, V.N., Troitskaya, L.N.,  
Malysheva, T.V., Butorin, K.K.

TITLE: Chemical Dressing of Manganese Ores of the Ikat-Garga  
Deposit (Khimicheskoye obogashcheniye margantsevykh rud  
Ikat-Garginskogo mestorozhdeniya)

PERIODICAL: Izv. vost. fil. AN SSSR, 1957, Nr 7, pp 31-39

ABSTRACT: Three methods of chemical dressing of Mn ores by leaching  
are tested: 1)  $H_2SO_4$ , 2)  $SO_2$ , and 3)  $(NH_4)_2SO_4$ . It is shown  
that concentrates containing 52.2, 58, and 50%, respectively,  
with yields of 27.9, 23.6, and 25%, may be obtained. The pre-  
sence of large amounts of Ca in the ore necessitates an ele-  
vated consumption of leaching agents.

N.P.

1. Manganese ores--Processing
2. Sulfuric acid--Effectiveness
3. Sulfur dioxide--Effectiveness
4. Ammonium sulfate--Effectiveness
5. Calcium--Properties

Card 1/1

GOLUTVIN, Yu.M.; MALYSHEVA, T.V.; SKOROBGATOVA, V.I.

Solubility of hydrogen sulfide and carbon dioxide in water and  
aqueous solutions of ammonia and phenol. Izv. Sib. otd. AN SSSR.  
no.8:83-87 '58. (MIRA 11:10)

1. Vostochno-Sibirskiy filial AN SSSR.  
(Phenol) (Hydrogen sulfide) (Ammonia) (Carbon dioxide)

GOLUTVIN, Yu.M.; TROITSKAYA, L.N.; KRYUKOVA, V.N.

Thermographic investigation of clays from the Cherekhovo deposits. Izv.Sib.otd.AN SSSR no.11:156-159 '58. (MIRA 12:2)

1. Vostochno-Sibirskiy filial AN SSSR.  
(Cherekhovo Basin--Clay--Analysis)

5(2)  
 AUTHORS: Ageyev, N. V., Golutvin, Yu. M., Samsonov, V. P. SOV/78-4-8-26/43  
 TITLE: The Interatomic Interaction in the Compounds of Titanium With Silicon and Germanium (Mezhatomnoye vzaimodeystviye v soyedineniyakh titana s kremniyem i germaniyem)  
 PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 8, pp 1864-1872 (USSR)  
 ABSTRACT: On the basis of references 1-10 the authors give a total survey of the known compounds of titanium with the elements of the IV group (Si, Ge, Sn, Pb) (Fig 1). In the system Ti - Si the following series is set up according to the decreasing stability of the chemical bond by means of the formation heat (Fig 2), temperature dependence of the thermal capacity (Fig 3), and the minimum of the interatomic distances in the lattices (Table 1):  $TiSi \rightarrow Ti_5Si_3 \rightarrow TiSi_2$ . For the Ti-Ge compounds the series  $TiGe \rightarrow Ti_5Ge_3 \rightarrow TiGe_2$  is obtained. In the system Ti-Sn (Table 3) only the crystal structure of  $Ti_5Sn_3$  is exactly investigated among the four compounds  $Ti_3Sn$ ,  $Ti_2Sn$ ,  $Ti_5Sn$  and

Card 1/3

The Interatomic Interaction in the Compounds of Titanium With Silicon and Germanium

SOV/78-4-8-26/43

$Ti_6Sn_5$ . On the basis of the interatomic distances it is proved that the  $Ti_5Sn_3$  bond is stronger than that of  $Ti_3Sn$ . The comparison of the interatomic distances in the systems Ti-Si, Ti-Ge and Ti-Sn (Table 4) shows that the substitution of silicon by germanium or tin leads to a weakening of the bond. This weakening increases with decreasing titanium content of the compound:  $Ti_5X_3 \rightarrow TiX \rightarrow TiX_2$ . From this the lack of titanium-tin compounds with high tin content may be explained. The comparison of the atomic volumes of the elements with the volume reduction which occurs in the formation of the systems investigated (Figs 11,12) leads to the conclusion that in the system Ti-Si electrons pass from silicon to titanium, in the system Ti-Ge the reverse process takes place, whereas no electron transition takes place between titanium and tin. Taking the free energies of the system Ti-Si (Figs 8-10) as example it is demonstrated that the formation of a peritectic is not bound to lead to a lower stability of the forming compounds. The formation of a compound due to peritectic reaction depends on the free energies of all compounds of the system

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SOV/78-4-8-26/43  
The Interatomic Interaction in the Compounds of Titanium With Silicon and Germanium

concerned and on their relation to the curve of the free energy of the liquid phase. There are 12 figures, 4 tables, and 16 references, 5 of which are Soviet.

SUBMITTED: April 28, 1958

Card 3/3

SOV/76-33-8-21/39

5(4)

AUTHOR:

Golutvin, Yu. M.

TITLE:

Heat Content and Specific Heats in the System Titanium - Silicon

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1798-1805  
(USSR)

ABSTRACT:

The heats of formation (HF) of the titanium silicides  $TiSi_2$ ,  $TiSi$  and  $Ti_5Si_3$  have already been determined in a previous paper (Ref 2). In the present case, the heat content (HC) at high temperatures was determined for titanium silicides (I) and metallic titanium according to the mixture method (Ref 6) in a strong steel calorimeter. The substance investigated was placed in a platinum ampoule (type Nr 400 GOST 6563-53), and the temperature was measured via Pt-Pt-Rh thermocouples by means of a potentiometer PPTM-1 with a reflector galvanometer M-21/4. After the measurements had been taken, the Pt-ampoule was removed, and (I) analyzed (Table 1). By differentiating the equations of the (HC) obtained from experiments (Tables 2-5), the author obtained the equations of the temperature function of specific heat:

Card 1/3

Heat Content and Specific Heats in the System Titanium - Silicon SOV/76-33-8-21/39

$$\text{TiSi}_2: C_p = 14.94 + 8.32 \cdot 10^{-3} T - 0.445 \cdot 10^6 T^{-2} \text{ cal/mol.degree;}$$

(298 - 1180°K, ±1.9%)

$$\text{TiSi}: C_p = 15.43 - 0.8832 \cdot 10^6 T^{-2} \text{ cal/mol.degree; (298-1350°K, ±1.0%)}$$

$$\text{Ti}_5\text{Si}_3: C_p = 58.22 + 5.742 \cdot 10^{-3} T - 2.646 \cdot 10^6 T^{-2} \text{ cal/mol.degree;}$$

(298-1170°K, ±3.0%)

$$\alpha\text{-Ti}: C_p = 8.641 + 1.405 \cdot 10^{-4} T - 0.3467 \cdot 10^6 T^{-2} \text{ cal/g.atom.degree;}$$

(298-1155°K, ±1.6%)

$$\beta\text{-Ti}: C_p = 7.968 \text{ cal/g.atom.degree; (1155-1400°K, ± 0.8%).}$$

For the transformation heat  $\alpha\text{Ti} \rightarrow \beta\text{Ti}$  at 1155°K the following value was found  $\Delta H_{1155} = + 820 \pm 20 (\pm 2.4\%) \text{ cal/g.atom.}$  From the data of the present paper and the values for the (HF) from reference 2 the temperature functions of the heat effects were calculated - equations (6) - (12). Finally, the author

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Heat Content and Specific Heats in the System Titanium - Silicon SOV/76-33-8-21/39

thanks N. V. Areyev, Corresponding Member of the AS USSR.  
There are 2 figures, 5 tables, and 17 references, 8 of which  
are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut metallurgii im. A. A. Baykova  
(Academy of Sciences USSR, Institute of Metallurgy imeni  
A. A. Baykov)

SUBMITTED: January 31, 1958

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84636

54700

2209, 1273, 1087

S/076/60/034/010/018/022  
B015/B064

AUTHORS: Golutvin, Yu. M., and Kozlovskaya, T. M.

TITLE: Formation Heats of Vanadium Silicides 21

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10.  
pp. 2350 - 2354

TEXT: Since no exact published data are available, the authors determined the standard formation heats for the vanadium silicides  $V_3Si$ ,  $V_5Si_3$ , and  $VSi_2$  (Refs. 1, 2) as well as for metallic vanadium.

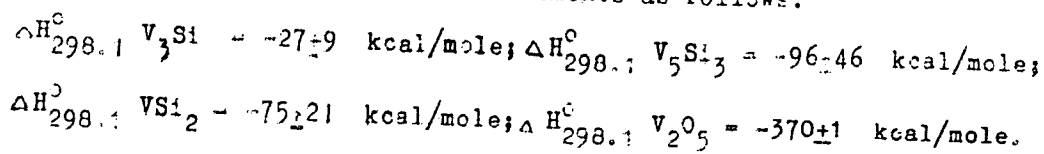
A method given for titanium silicides in Ref. 7 was applied, and the formation heats were determined by combustion in a bomb calorimeter. Monocrystalline silicon used for the production of semiconductors and 95.05% vanadium served as initial substances for the above silicides. The silicides were molten in zirconium oxide crucibles with barium chloride serving as fluxing material, and then subjected to chemical and X-ray phase-shift analyses. To check the completeness of the combustion of silicides in the bomb calorimeter, the authors

Card 1/3

Formation Heats of Vanadium  
Silicides

84636  
S/076/60/034/010/018/022  
B015/B064

experimentally determined the oxidizability of the preparations to be studied, and established the amount of oxygen necessary for complete oxidation. The calorific value of the calorimeter was checked with a standard (benzoic acid) of the VNIIM im. D. I. Mendeleeva (All-Union Scientific Research Institute of Metrology). To exclude the effect of a possible incomplete combustion upon the values of measurement, the values of the combustion heats were extrapolated. Table 3 gives the resulting values of measurement. Herefrom and from the extrapolated values, respectively, the authors determined the formation heats of the vanadium silicides from the elements as follows:



The formation heat obtained for  $V_2O_5$  is in good agreement with the data of Rossini et al. (Ref. 5) and the data from the handbook by Kubashevskiy and Evans (Ref. 4).

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84636

Formation Heats of Vanadium  
Silicides

S/076/60/034/010/018/022  
B015/B064

There are 2 figures, 3 tables, and 8 references: 5 Soviet, 1 US, and 1 German.

ASSOCIATION: Akademiya nauk SSSR Institut metallurgii im. A. A. Baykova  
(Academy of Sciences USSR, Institute of Metallurgy)

SUBMITTED: February 7, 1959

X

Card 3/3

S/076/61/035/001/008/022  
B004/B060

AUTHORS: Golutvin, Yu. M. and Lyan Tszin'-kuy (Moscow)

TITLE: Heats of formation, heat contents, and specific heats of chromium silicides

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 129-141

TEXT: According to Refs. 1-8, the chromium-silicon system contains the four compounds  $\text{Cr}_3\text{Si}$ ,  $\text{Cr}_5\text{Si}_3$ ,  $\text{CrSi}$ , and  $\text{CrSi}_2$ . The authors determined the heat of formation, heat content, and specific heat of these compounds. Melts with almost stoichiometric composition were produced from electrolytic Cr and pure Si using an arc furnace and an argon atmosphere. For the purpose of chemical analysis, the silicides were decomposed by melting with  $\text{Na}_2\text{O}_2$ . The phase composition was checked with X-rays and in a metallographic way. The following mean combustion heats were obtained: metallic Cr:  $135 \pm 0.9$  kcal/g-atom;  $\text{Cr}_{2.968}\text{Si}$ :  $587 \pm 1.7$  kcal/mole;  $\text{Cr}_{2.083}\text{Si}$ :  $472 \pm 1.3$  kcal/mole;  $\text{Cr}_{5.148}\text{Si}_3$ :  $1279 \pm 3.7$  kcal/mole;  $\text{Cr}_{1.003}\text{Si}$ :

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S/076/61/035/001/008/022  
B004/B060

Heats of formation, heat contents, ...

336.5±0.4 kcal/mole;  $\text{Cr}_{1.004}\text{Si}_2$ : 545.4±1.4 kcal/mole. From this, the following formation heats were calculated:  
 $\Delta H_{298.1}^{\circ} \text{Cr}_3\text{Si} = -33 \pm 6$ ;  $\Delta H_{298.1}^{\circ} \text{Cr}_5\text{Si}_3 = -78 \pm 11$ ;  $\Delta H_{298.1}^{\circ} \text{CrSi} = -19 \pm 2$ ;  
 $\Delta H_{298.1}^{\circ} \text{CrSi}_2 = -29 \pm 4$ ; and  $\Delta H_{298.1}^{\circ} \text{Cr}_2\text{O}_3 = -271 \pm 2$  kcal/mole. Using the mixing method described in Ref. 10 and a metallic calorimeter, the heat contents were determined in an argon atmosphere. The following equations were obtained for the heat contents:

$$\Delta H_{298.1}^T = 5.625T + 1.114 \cdot 10^{-3}T^2 + 128727/T - 2207.6, (\pm 1.6\%) \text{ for } \text{Cr}_{3.130}\text{Si}$$

$$\Delta H_{298.1}^T = 6.616T + 0.7195 \cdot 10^{-3}T^2 + 217662/T - 2766.2, (\pm 1.1\%) \text{ for } \text{Cr}_{2.207}\text{Si}$$

$$\Delta H_{298.1}^T = 6.942T + 0.6184 \cdot 10^{-3}T^2 + 254920/T - 2979.5, (\pm 1.7\%) \text{ for } \text{Cr}_{5.483}\text{Si}_3$$

$$\Delta H_{298.1}^T = 7.219T + 0.4368 \cdot 10^{-3}T^2 + 272883/T - 3106.3, (\pm 1.4\%) \text{ for } \text{Cr}_{3.206}\text{Si}_2$$

$$\Delta H_{298.1}^T = 6.347T + 0.8104 \cdot 10^{-3}T^2 + 199354/T - 2632.7, (\pm 1.7\%) \text{ for } \text{Cr}_{1.030}\text{Si}$$

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S/076/61/035/001/008/022  
B004/B060

Heats of formation, heat contents, ...

$$\Delta H_{298.1}^T = 4.945T + 1.649 \cdot 10^{-3}T^2 + 146537/T - 2112.1, (\pm 1.8\%) \text{ for } \text{CrSi}_{1.837}$$

From this, the following equations were derived for the temperature dependence of the specific heats:

$$\text{Cr}_3\text{Si}: C_p \text{ cal/mole} \cdot \text{deg} = 22.62 + 8.8000 \cdot 10^{-3}T - 531652/T^2;$$

$$\text{Cr}_5\text{Si}_3: C_p \text{ cal/mole} \cdot \text{deg} = 59.144 + 6.420 \cdot 10^{-3}T - 2325360/T^2;$$

$$\text{CrSi}: C_p \text{ cal/mole} \cdot \text{deg} = 12.510 + 3.420 \cdot 10^{-3}T - 384660/T^2;$$

$$\text{CrSi}_2: C_p \text{ cal/mole} \cdot \text{deg} = 14.298 + 10.530 \cdot 10^{-3}T - 417630/T^2.$$

These equations hold for the temperature range of 25-600°C and are accurate to within  $\pm 2\%$ . A comparison between the formation heats at 25°C and the atomic specific heats indicated that the looser the interatomic bond, the greater is the atomic specific heat, the tighter is the bond, the smaller is the specific heat, and the more it decreases as compared to the additive value. The strength of the bond decreases as follows:

$\text{Cr}_5\text{Si}_3 \rightarrow \text{CrSi}_2 \rightarrow \text{CrSi} \rightarrow \text{Cr}_3\text{Si}$ . N. V. Ageyev is thanked for assistance and a discussion. There are 6 figures, 14 tables, and 16 references:

Card 3/4

Heats of formation, heat contents, ...

S/076/61/035/001/008/022  
B004/B060

10 Soviet-bloc and 5 non-Soviet-bloc.

ASSOCIATION: Akademiya nauk SSSR, Institut metallurgii im. A. A. Baykova  
(Academy of Sciences USSR, Institute of Metallurgy imeni  
A. A. Baykov)

SUBMITTED: April 27, 1959

Card 4/4

GOLUTVIN, Yuriy Mikhaylovich; AGEYEV, N.V., otv. red.; DRAGUNOV, E.S.,  
red.; BAGRAMOVA, A.A., tekhn. red.

[Heats of formation and types of chemical bonds in inorganic  
crystals] Teplooty obrazovaniia i tipy khimicheskoi sviazi v  
neorganicheskikh kristallakh. Moskva, Izd-vo Akad. nauk SSSR,  
1962. 94 p. (MIRA 15:5)

1. Chlen-korrespondent Akademii nauk SSSR (for Ageyev).  
(Crystals) (Heat of formation) (Chemical bonds)

AGEYEV, N.V.; GOLUTVIN, Yu.M.

M.V.Lomonosov and crystallochemistry. Vop.ist.est.i tekhn.  
no.12:62-66 '62. (MIRA 15:4)  
(Lomonosov, Mikhail Vasil'evich, 1711-1765)  
(Crystallography)

S/076/62/036/006/005/011  
B101/B144

AUTHOR: Golutvin, Yu. M.  
TITLE: Heat of formation and type of chemical bonds in the  
silicides of transition metals  
PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 6, 1962,  
1315 - 1318

TEXT: For the systems Ti - Si, V - Si, and Cr - Si the formation heats of the silicides were determined calorimetrically; for Ca - Si, Fe - Si, Co - Si, and Ni - Si they were calculated from data published and kcal/g-atom versus atom% of Si was plotted (Fig.). The shift in the maximum of the formation heat toward the silicide with a high Si content in the systems containing Ca, Ti, or V, is explained by the electron displacement from the metal to Si, according to R. Kiessling (Met. Rev., 2, 77, 1957) and R. J. Weiss and J. J. De Marco (Rev. mod. phys., 30, 59, 1958) who found that in crystalline state the occupation of 3d-shells in the series Sc, Ti, V, Cr, Mn, Fe, Co, Ni does not begin until Cr is reached. In Fe, Co and Ni silicides, the valency electrons of Si are

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Heat of formation and...

S/076/62/036/006/005/011  
B101/B144

captured by the 3d-shells of the metals, and the maxima of the formation heat therefore shift toward silicides with high metal contents. Cr silicides hold an intermediate position, since their tendencies to emit and capture electrons compensate each other. The covalent nature of Cr - Si bonds explains the semiconducting properties of  $\text{CrSi}_2$ .

N. V. Ageyev, Corresponding Member AS USSR, is thanked for discussions. There are 1 figure and 1 table. ✓

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov)

SUBMITTED: May 9, 1961

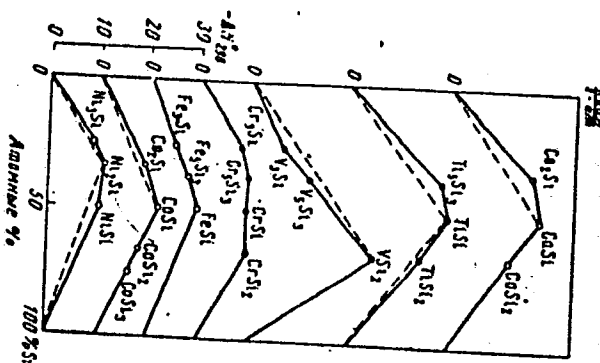
Card 2/3

Heat of formation and....

S/076/62/036/006/005/011  
B101/B144

Fig. Heat of formation per gram atom of  
silicides of transition metals.

Legend: Ordinate: kcal/gram atom,  
abscissa: atom%.



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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000515920014-4"

corresponding to the positive and negative charges of the metal ions  
formed. The resulting possible values of the positive and negative metal valence

basic growth of the positive ionization of the silicon  
the period is caused by the increased positive ionization of the silicon. Or'g.

39008-66 (R)(K)/AF(M)/DT(a)/DS(C)/SI (U) 12/ 2/8

ACC NR: AF6014900 (A) SOURCE CODE: UR/0076/65/039/012/3102/3105

AUTHOR: Golutvin, Yu. M.; Maslennikova, E. G.

ORG: Institute of Metallurgy, AN SSSR, Im. A. A. Baykov (Institut metallurgii AN SSSR)

52  
B

TITLE: Heats of formation of zirconium silicides

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 12, 1965, 3102-3105

TOPIC TAGS: heat of formation, zirconium compound, silicide

ABSTRACT: The article describes the results of measurements of the heats of formation of zirconium silicides by the method of solution in a mixture of hydrofluoric and sulfuric acids in a calorimeter with a platinum reactor. Starting materials were zirconium powder with a purity of 99.7% and silicon powder made from high purity monocrystalline silicon (99.999%). The mixture of zirconium and silicon powders was pressed into tablets and melted in beryllium oxide crucibles in an argon atmosphere in an induction furnace and in a resistance furnace with a tungsten heater. Measurements were made of the heats of formation of the following compounds: metallic Zr;  $Zr_2Si$ ;  $Zr_5Si_2$ ;  $Zr_6Si_5$ ;  $ZrSi$ ;  $ZrSi_2$ . The results are given in a table. The following values were

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UDC: 541.11

L 35800-66

ACC NR: AP6014900

obtained for the heats of formation ( $\Delta H^0_{298.1}$ ):  $Zr_2Si--81 \pm 3$ ;  
 $Zr_5Si_3--216 \pm 8$ ;  $Zr_6Si_5--253 \pm 11$ ;  $ZrSi--62 \pm 2$ ;  $ZrSi_{1.62}--47 \pm 3$   
kcal/mole. Orig. aft. has: 1 figure and 1 table.

SUB CODE: 07/ SUBM DATE: 17Dec64/ ORIG REF: 010/ OTH REF: 008

ms  
Card 2/2

GOLUTVINA, A. F.

DEYNEKO, L. P., GOLUTVINA, A. F. "On the problem of the reactions of the brain in metastatic tumors", Trudy Voronezhsk. gos. med. in-ta, Vol. XVIII, 1949, p. 118-23.

CO: U-4631, 16 Sept 53, (Istepis 'Zhurnal 'nykt Statey, No. 24, 1949).

GOLUTVINA, A. F.

GOLUTVINA, A. F. "Epileptic attacks in brain tumors", Trudy Voronezhsk. gos. med. in-ta, Vol. XVIII, 1949, p. 132-36.

SO: U-4631, 16 Sept 53, (Letopis 'Zhurnal 'rykt Statey, No. 24, 1949).



GOINTOVA, A. N. and Associates.

"The Complete Diagnosis of Gonorrhea in Woman."

Vestnik venerologii i dermatologii (Bulletin of Venereology Dermatology),  
No 1, January-February 1954, (bi-monthly), Moscow.

GOLUTVINA, A.N.

GOLUTVINA, A.N., kand.med.nauk

[Gonorrhea in women] Gonorreia zhenshchiny. Sverdlovsk, Sverdlov-  
skiy obl.dom sanitarnogo prosveshchenia, 1955. 8 p. (MIRA 11:2)  
(GONORRHEA)

GOLUTVINA, A.N.

GOLUTVINA, A.N., starshiy nauchnyy sotrudnik.

Data on postgonorrheal diseases of the lower urogenital tract in women. Vest. ven. i derm. no.4:31-34 J1-Ag '55.  
(MLRA 8:12)

1. Iz Sverdlovskogo oblastnogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (dir.-kandidat meditsinskikh nauk A.V.Bakhireva)  
(GONORRHEA, complications,  
postgonorrheal dis. of lower part of female genitalia)

GOLUTVINA, A.N., kandidat meditsinskikh nauk.,; IKONNIKOV, N.N.,; ARALOVA,  
Z.T.,; CHERNYATINA, A.N.,; SOTRAPINSKAYA, T.B.

Biomycin in the treatment of gonorrhea and nongonorrheal diseases  
of the urogenital system. Vest. ven.i derm. 6:46-48 N-D '55. (MLRA 9:5)

1. Iz Sverdlovskogo oblastnogo nauchno-issledovatel'skogo kozhno-  
venerologicheskogo instituta i oblastnogo dispansera (dir.-kandidat  
meditsinskikh nauk A.V. Bakhireva; i.o. glavnogo vracha oblastnogo  
dispansera N.P. Toporkov)

(ANTIBIOTICS, ther. use

biomycin, in

gonorrheal & non-gonorrheal dis. of urogenital system)

(UROGENITAL SYSTEM, dis.

ther., biomycin)

(GONORRHEA, ther.

biomycin))

GOLOTVINA, A.N., starshiy nauchnyy sotrudnik.

late results of treating nongonorrheal vulvovaginitis in girls. Vest.  
derm. i ven. 32 no.6:61-64 N-D '58. (MIRA 12:1)

1. Iz Sverdlovskogo kozhno-venerologicheskogo instituta (dir. - kand.  
med. nauk A. V. Bakhireva).

(VAGINITIS, ther.

combined ther. of nongonorrheal vulvovaginitis, remote  
results (Rus))

(VULVA, dis.

vulvovaginitis, nongonorrheal, remote results of combined  
ther. (Rus))

TURANOVA, Ye.N., kand. med. nauk; NYUNIKOVA, O.I.; GOLUTVINA, A.N.; TSIVELEVA, Ye.S.

Study of the causes and characteristics of the clinical course of chronic gonorrhea in women. Akush. i gin. no.6:98-101 N-D '63.

(MIRA 17:12)

1. Iz otdela gonorei (zav. - prof. I.M.Porudominskiy) TSentral'nogo kozhno-venerologicheskogo instituta (dir. - kand. med. nauk N.M. Turanov) Sverdlovskogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (direktor A.V.Bakhireva) i Bol'nitsy imeni B.G. Korolenko (glavnyy vrach A.I.Pustovaya).

5(3)

AUTHORS:

Turova-Polyak, M. B., Sosnina, I. Ye., Golutvina, I. G.,  
Yudkina, T. P.

SOV/79-29-4-7/77

TITLE:

Isomerization of Polymethylene Hydrocarbons Under the Influence of Aluminum Chloride (Izomerizatsiya polimetilenovykh uglevodorodov pod vliyaniyem khloristogo alyuminiya). XXIII. Isomerization of 2-Methyl-bicyclo-(1,2,2)-heptane (XXIII. Izo-merizatsiya 2-metil-bitsiklo-(1,2,2)-geptana)

PERIODICAL:

Zhurnal obshchey khimii, 1959, Vol 29, Nr 4, pp 1078-1083 (USSR)

ABSTRACT:

Apart from the paper by P. R. Schlever (Ref 1), the contact transformations of bicyclic bridge hydrocarbons in the presence of  $AlCl_3$  have so far not been dealt with. As the basis of many natural products the skeleton of bicyclo-(1,2,2)-heptane is of great interest. 2-methyl-bicyclo-(1,2,2)-heptane is obtained by condensation of cyclopentadiene with acrolein and by hydrogenation of 2-methyl-bicyclo-(1,2,2)-heptene-5 in the presence of the skeleton-nickel catalyst. Theoretically two endo- and exo-isomers are possible for this heptane which, however, could hitherto not be separated (Scheme 1). Such configurations of the spatial arrangement of hydrocarbons were observed by Schlever

Card 1/2

SOV/79-29-4-7/77

Isomerization of Polymethylene Hydrocarbons Under the Influence of Aluminum Chloride. XXIII. Isomerization of 2-Methyl-bicyclo-(1,2,2)-heptane

(Ref 1). The authors found that 2-methyl-bicyclo-(1,2,2)-heptane practically completely isomerizes to bicyclo-(1,2,3)-octane by reaction with  $AlCl_3$  at  $75^\circ$ , i.e. to a system consisting of five- and six-membered rings on the basis of a seven-membered ring. At  $100^\circ$  this reaction is accompanied by the formation of condensation products. At  $21-28^\circ$  a transition from one steric configuration of 2-methyl-bicyclo-(1,2,2)-heptane into the other takes place which was proved by spectrum analysis and the physical constants. On the strength of the results obtained it may be concluded that the part of the molecule of the above heptane which corresponds to methyl cyclopentane reacts in the presence of  $AlCl_3$  in the same way as in isolated state, i.e. it expands to a six-membered ring. On the hydrogenolysis of bicyclo-(1,2,3)-octane the m-xylene is formed. There are 1 figure, 3 tables, and 15 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: February 11, 1958

Card 2/2



L 7890-66 EWT(m)/EPF(c)/EWP(j)/T/ETC(m) WW/RM  
 ACC NR: AP5024957 SOURCE CODE: UR/0286/65/000/016/0020/0020  
 AUTHORS: Golutvina, L. F.; Pavlov, S. A.; Avilov, A. A.; Butuzkina, Z. A.; Tsentsiper, Z. B.; Plotnikov, I. V.; Abramova, D. S.; Strel'tsova, V. I.  
 ORG: none

TITLE: Method for obtaining fireproof coverings. Class 8, No. 173702 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 16, 1965, 20

TOPIC TAGS: fireproofing, fireproof covering, sodium bicarbonate, potassium bicarbonate, aluminum sulfate, *high polymer, protective coating, fire resistant material, high temperature coating*

ABSTRACT: This Author Certificate presents a method for obtaining fireproof coverings on the basis of *high polymeric materials* containing antipyrenes. To obtain self-extinguishing foam-forming coatings possessing high fire resistance and low heat conduction, a mixture of strong bases (for instance, sodium or potassium bicarbonate), salts of strong acids (for instance, aluminum sulfate), and salts containing water of crystallization (vitriols, alums, and others) are used as antipyrenes.

SUB CODE: *MT*/ SUBM DATE: 29Dec62

Card 1/1

UDC: 678.049.91

GOLUTVINA, L.F., kand. tekhn. nauk; PAVLOV, S.A., doktor tekhn. nauk;  
IVANOVA, Ye.I., nauchnyy sotrudnik; POPOVA, P.A., nauchnyy  
sotrudnik; ZADVORNOV, V.P., nauchnyy sotrudnik

Operational properties of fireproof coated materials. Nauch.-  
issl. trudy VNIIPK no.14:83-92 '63. (MIRA 18:12)

NIKITIN, B.A. [deceased]; VDOVENKO, V.M.; GOLUTVINA, M.A.

Distribution of various nitrates between aqueous solutions and  
diethyl ether. Trudy Radiev, inst. AN SSSR. 8:3-7 '58.

(MIRA 12:2)

(Nitrates)

(Ethyl ether)

1 RML

7080

1. WORKING ON THE WORKING BANK

[illegible]

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4-11-12 (for expenses in fiscal year of 1912-13)

industry having to deal with radioactive isotopes. A 19

assumption of the proportion of radioactive isotopes in

of measuring a 1:4 relation and no need for work to

For the 2000-2001 period, the following table shows the number of

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

7. 14. 1. 2023 23:14 1. 2. 2023 23:14

And

BURTSEVA, L.N.; LEVIN, V.I.; GOLUTVINA, M.M.; BUBNOV, V.S.

Separation of radioactive manganese without a carrier from  
deuteron irradiated chromium. Radiokhimiia 1 no.2:231-235  
'59. (MIRA 12:8)

(Manganese--Isotopes) (Chromium) (Deuterons)

GOLUTVINA, M.M.; SHITIKOVA, M.G.; LEVIN, V.I.; LENSKAYA, R.V.

Obtaining sodium chromate ( $\text{Na}_2\text{Cr}^{51}\text{O}$ ) and chromium chloride ( $\text{Cr}^{51}\text{Cl}_3$ ) and their utilization for labeling erythrocytes and plasma proteins.  
Med. rad. 4 no.3:61-65 Mr '59. (MIRA 12:7)

1. Iz Tsentral'nogo ordena Lenina instituta gematologii i perelivaniya krovi Ministerstva zdravookhraneniya SSSR.

(CHROMIUM,

prep. of sodium chromate & chromium chloride & labeling erythrocytes & plasma protein (Rus))

(BLOOD PROTEINS,

labeling with chromium chloride & sodium chromate (Rus))

(ERYTHROCYTES,

same)

PHASE I BOOK EXPIRATION 507/493

Method polynomiya i ismereniya radioaktivnykh preparatov) sbornik  
staty (Methods for the production and measurement of radioactive  
preparations) Collection of articles Moscow, Izdatstat,  
1960. 301 p. Extra slip inserted. 6,000 copies printed.

General Ed.: Valeriy Viktorovich Bockarev; Ed.: M.A. Baguro;  
Tech. Ed.: M.A. Vlasova.

PURPOSE: This collection of articles is intended for scientific and  
technical personnel working in the production of radioactive iso-  
topes.

COVERAGE: The collection contains original studies on methods of  
obtaining and measuring radioactive preparations. According to  
the scope of the articles, the collection is divided into two  
sections: the first section contains articles on the production of  
radioactive isotopes and the second section contains articles on  
the measurement of radioactive preparations. In addition to several survey articles  
the collection contains discussions on the production of radio-  
active isotopes and isotopic radioactive preparations, including  
a number of carrier-free isotopes and several colloidal and other  
therapeutic preparations. Also discussed are methods for prepar-  
ing a number of tagged organic compounds, problems in the analy-  
sis of tagged organic compounds, the methods and relative measure-  
ment of activity and the radioactive analysis and preparations.  
New instruments and equipment are described and included in the  
concluding measurement methods and technique are included. V.I. Zerkov,  
Candidate of Chemical Sciences, V.P. Shishkov, Candidate of Tech-  
nical Sciences, I.N. Bakharev, Candidate of Biological Sciences,  
and V.I. Shostakov, Candidate of Chemical Sciences, are mentioned  
as having helped directly in the selection and preparation of the  
material for publication. References accompany each article.

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GOLUTVINA, M. M.

LATYSHEV, G. D.

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PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurazulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. M. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. H. Lobanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

CARD 1/20



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Transactions of the Tashkent (Cont.)

SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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Transactions of the Tashkent (Cont.)

SOV/5410

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instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

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RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION  
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Lobanov, Ye. M. [Institut yadernoy fiziki UzSSR - Institute of Nuclear Physics AS UzSSR]. Application of Radioactive Isotopes and Nuclear Radiation in Uzbekistan

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SOV/5410

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21.3200

77239  
SOV/89-8-2-4/30

AUTHORS: Spitsyn, V. I., Golutvina, M. M

TITLE: Separation of Carrier-Free  $\text{Pa}^{233}$  From Compounds of Thorium Nitrate Irradiated by Slow Neutrons

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 2, pp 117-120 (USSR)

ABSTRACT: The authors developed experimentally the method proposed by Maddock and Miles (see references) for carrier-free separation of radiochemically pure  $\text{Pa}^{233}$  from irradiated nitrate of thorium. The separation from thorium and zirconium was achieved by absorbing it by means of a precipitate of  $\text{MnO}_2$  first described by Grosse and Arguss (J. Amer. Chem. Soc. 57, 438 (1935)). The authors found that the amount of sorption of protoactinium does not depend much on the precipitation process. The authors describe in details their experiments which lead them to establish the following procedure for the extraction. To the solution of freshly exposed  $\text{Th}(\text{NO}_3)_4$  in 7N  $\text{HNO}_3$  they add a 10% solution of  $\text{NaSO}_4$  from computed

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Separation of Carrier-Free  $\text{Pa}^{233}$  From  
Compounds of Thorium Nitrate Irradiated  
by Slow Neutrons

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0.2 ml for each 1 ml of the original solution. They heat it over a water bath up to  $80^{\circ}\text{C}$  and while stirring add a 1% solution of  $\text{KMnO}_4$  (0.5 ml for 1 ml of the starting solution). The  $\text{MnO}_2$  precipitate coagulates for the next 20 min in the water bath; it is next centrifugated from the mother liquor and then dissolved in a hot concentrated  $\text{HNO}_3$  with a small addition of sodium nitrite. Equal volume of water is added to this solution and  $\text{MnO}_2$  is twice more precipitated in the manner just described. Next, the  $\text{MnO}_2$  so obtained is dissolved in hot 6N  $\text{HCl}$ . To this solution they add equal volume of a solution of cupferrate (7 g of cupferrate and 0.2 g hydroquinone dissolved in 6N  $\text{HCl}$  to obtain 100 ml, and then filtered through a paper filter). The solution is then carefully stirred and poured into the separating funnel of appropriate size. The previous container is carefully washed by means of two portions of amyl acetate

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Separation of Carrier-Free  $\text{Pa}^{233}$  From  
Compounds of Thorium Nitrate Irradiated  
by Slow Neutrons

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the total volume of which is equal to the sum of volumes of the hydrochloric acid solution and the solution of cupferrate and the acetate is carried into the funnel. The extraction goes on for some 5 min until the phases divide. At this point a check of  $\beta$ -activities yielded the results in Table 1.

The layers are then separated, and the protoactinium is re-extracted from the amyl acetate phase by means of an equal volume of a 1M citric acid. The solution is then held for 30 min over a boiling water bath and agitated periodically. The solution is finally cooled; the separated water phase contained  $\text{Pa}^{233}$ . Table 3 summarizes the results. Relative mean square error of the measured activity was  $\pm 3\%$ . Protoactinium was positively identified through its  $\beta$ -decay with a half-life  $T_{1/2}$  of 27 days. The authors claim that utilizing this method one can separate 70% (of activity) of protoactinium. There are 3 tables, 1 figure, and 8 references, of which 6 are U.S., 2 U.K. The 5 most recent references are: A. Goble, A. Maddock, Trans.

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Separation of Carrier-Free Pa<sup>233</sup> From  
Compounds of Thorium Nitrate Irradiated  
by Slow Neutrons

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Table 1. Extraction of the cupferrate of Pa<sup>233</sup> with  
amyl acetate from 6N HCl solution.

$\beta$ -activity of the amyl acetate phase, % of the initial activity	$\beta$ -activity of the aqueous phase, % of the initial activity
107	2
113	3
111	4
78	1
80	1
116	5
Average 100	3

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Separation of Carrier-Free Pa<sup>233</sup> From:  
Compounds of Thorium Nitrate Irradiated  
by Slow Neutrons

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Table 3. Extraction of Pa<sup>233</sup> from freshly irradiated  
compounds of thorium nitrates initial solution 7 N  
HNO<sub>3</sub>; 4.4 mg of MnO<sub>2</sub> per 1 ml of solution).

Tri-fold precipitation of MnO <sub>2</sub>		Extraction with amyl acetate from 6N HCl			Reextraction with 1M solution of citric acid		
Activity, %							
Coprecipitated	of mother liquor	of amyl acetate phase I	of aqueous phase	remaining on container walls	of citric acid phase	of amyl acetate phase II	remaining on container walls
90	1	95	2	3	112	0	0
99	1	91	3	6	81	0	19
98	2	92	2	6	83	0	17
93	—	93	—	—	89	—	—
103	—	90	—	—	86	—	—

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Separation of Carrier-Free Pa<sup>233</sup> From  
Compounds of Thorium Nitrate Irradiated  
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SOV/89-8-2-4/30

Faraday Soc., 55, Nr 4, 591 (1959); Neutron Cross  
Sections, New York, BNL, 1958; D. Strominger, J.  
Hollender, G. Seaborg, Rev. Mod. Phys. 30, Nr 2,  
585 (1958); A. Fudge, L. Woodhead, Chem. Ind., 33,  
1122 (1959); A. Fudge, L. Woodhead, Analyst, 81, Nr  
964, 417 (1956).

SUBMITTED: September 13, 1959

Card 6/6

22465

S/186/60/002/001/019/022

A057/A129

21.3200

AUTHORS: Golutvina, M.M.; Tikhomirova, Ye.A.

TITLE: Determination of radioactive impurities in germanium-71 preparates and preparation of radiochemically pure germanium-71

PERIODICAL: Radiokhimiya, v. 2, no. 1, 1960, 112 - 119

TEXT: The present investigations demonstrated that industrial samples of germanium-71 (produced by neutron bombardment of germanium metal) contain  $\text{Se}^{75}$ ,  $\text{Sb}^{124}$ ,  $\text{Tu}^{170}$  and  $\text{Cs}^{134}$  impurities in varying amounts. In order to obtain radiochemically pure  $\text{Ge}^{71}$ , a new simple extraction method was developed. A.N. Baraboshkin [Ref. 4: ZhNKh, 2, 11, 2680 (1957)] described two methods for the preparation of radiochemically pure  $\text{Ge}^{71}$ , but he did not publish data concerning the half-life of the pure product. In the present investigations preliminary experiments confirmed Baraboshkin's observation of gamma- and beta-ray emitting long-lived radioactive impurities in  $\text{Ge}^{71}$  from industrial production. Identification of these impurities were carried out on  $\text{Ge}^{71}$  samples obtained by 30-day neutron bombardment of spec-pure germanium from 7 different production runs with specific activities of about 180 - 220 mc/g. Energy ranges between 30 kev and 1.5 Mev of

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S/186/60/002/001/019/022

A057/A129

Determination of radioactive impurities in....

gamma-emitters were measured with a scintillation counter containing a  $\Phi\Phi\gamma$ -29 (FEU-29) photomultiplier, NaJ(Tl) crystal and single-channel analyzer. X-ray and beta-ray emitters were detected with an end-window counter [of T-25 БФЛ (T-25 BFL) type]. The latter was also used for activity measurements of beta-emitters, while the activity of gamma-emitters was determined with a gamma-counter [of MC-11 (MS-11) type] or a gamma-spectrometer. Short-lived isotopes were not detected and the measurements were carried out for 14 - 16 days. The absorption curves obtained for beta-emitters and a typical gamma-spectrum curve is graphically illustrated. In order to obtain radiochemically pure  $\text{Ge}^{71}$ , the following method was developed: The irradiated germanium is pulverized, dissolved in 10% NaOH solution, 30%  $\text{H}_2\text{O}_2$  solution is added, the latter is boiled off, neutralized, and acidified with HCl up to 9 N HCl. From this solution Ge is extracted with  $\text{CCl}_4$  (repeated 2 - 3 times). Thus Cs, Sb and rare earths remain in the aqueous phase. Selenium passes partly into the organic phase and is removed therefrom with 9 N HCl. After this germanium is re-extracted with a small volume of 5 N NaOH solution from  $\text{CCl}_4$ . This method gives a total germanium yield of 70% and has the advantage that filtration, distillation etc., is avoided. After chemical separation the impurities in the aqueous phase were determined radiometrically with peaks obtained for Cs and Sb and a gamma-spectrum, indicating the presence of Se.

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Determination of radioactive impurities in....

S/186/60/002/001/019/022  
A057/A129

and of the yttrium group. The content of impurities varied in the different samples. Thus Se was determined in amounts of  $6 \cdot 10^{-3}$  -  $9 \cdot 10^{-1\%}$   $\text{Se}^{75}$ ; the activity of  $\text{Sb}^{124}$  was  $1 \cdot 10^{-4}$  -  $2 \cdot 10^{-3\%}$  of Ge activity; for  $\text{Cs}^{134}$  it was  $3 \cdot 10^{-2}$  -  $< 4 \cdot 10^{-3\%}$ ; for  $\text{Tl}^{170}$   $3 \cdot 10^{-2}$  -  $5 \cdot 10^{-2\%}$ . According to the duration of irradiation and to the content of radioactive impurities, the content of inactive impurities in the initial samples was determined as: Se  $6 \cdot 10^{-2\%}$ ; Cs  $< 1.5 \cdot 10^{-3\%}$ ; Tl  $1 \cdot 10^{-2\%}$  (thus rare earths about 2%); Sb  $< 3.5 \cdot 10^{-3\%}$ . Radiochemical purity of the obtained  $\text{Ge}^{71}$  was checked by the determination of the x-ray energy of the  $\text{Ga}^{71}$  daughter producing K-capture, and by the determination of the half-life. The obtained data (see Fig. 3) characterizing radiochemical properties of  $\text{Ge}^{71}$  are in complete agreement with corresponding literature data [Ref. 9: M. Langevin, Ann. Phys., 1, 57 (1956); Ref. 10: B.L. Saraf'et al., Phys. Rev., 91, 5, 1216 (1953)]. Germanium-71 obtained by the presented method contains a maximum of about  $10^{-5}$  gamma-quanta per disintegration of gamma-impurities. There are 5 figures and 18 references: 9 Soviet-bloc and 9 non-Sviet-bloc.

SUBMITTED: May 23, 1959

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A051/A130

21,3200

AUTHORS: Levin, V. I.; Golutvina, M. M.; Tikhomirova, Ye. A.

TITLE: Extraction of  $\text{Co}^{58}$  without a carrier from nickel irradiated with neutrons, by the extraction method

PERIODICAL: Radiokhimiya, v. 2, no. 5, 1960, 596 - 602

TEXT: The authors have attempted to find a more convenient method of  $\text{Co}^{58}$  extraction and were able to develop a separation method of indicator quantities of cobalt from the macro-quantities of nickel, using the extraction method with tributylphosphate from a hydrochloric solution.  $\text{Co}^{58}$  was extracted without a carrier from nickel oxide, irradiated with neutrons in the reactor. The radiochemical purity of the extracted  $\text{Co}^{58}$  was checked and the  $\text{Co}^{60}$  admixture was determined. The disadvantages of other existing methods of cobalt extraction and that of nickel using alcohols from solutions of perchlorates, chlorides and bromides, described by L. Garwin, A. N. Hixon (Ref. 7: Ind. Eng. Chem., 41, 10, 2298, 2303), T. E. Moore, R. J. Lenan, P. G. Yates (Ref. 8: I. Phys. Chem., 59, 1, 90, 1955) and T. E. Moore, R. W. Goodrich, E. A. Gootsman, B.S. Slerax, P. C.

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X

Yates (Ref. 9: J. Phys. Chem., 60, 5, 564, 1956) are said to be the formation of cobalt in the form of a complex, the destruction of which requires annealing, etc. The authors of this article investigated the extraction of cobalt and TBPh nickel from HCl and H<sub>2</sub>NO<sub>3</sub> solutions. In the first case satisfactory results were obtained, used by the authors for developing the method of Co<sup>58</sup> extraction without a carrier. Experiments were conducted for determining the effect of the Co concentration on its extraction. The distribution coefficients D-C were measured of the cobalt at various concentrations of the latter (Figure 1). Further experiments for the extraction of the Co from the HCl solution showed that the distribution coefficients of the Co increase with a growth of the HCl concentration (Figure 2) passing through the maximum (K = 1.3) for solution 9 n HCl. Extraction of Co from solution with a constant concentration of chloride ions resulted in the highest values of the distribution coefficients for solutions close to neutral ones (Figure 2, 2). With an increase in the acidity of the solution the distribution coefficient first sharply drops, and then this drop slows up and the distribution coefficient becomes independent of the acidity in a certain region. Experiments conducted with solutions con-

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taining  $\text{NiCl}_2$  and  $\text{HCl}$ , in concentrations where the chloride content remained constant and equal to 9 n resulted in a relationship shown in Figure 2,2,3. The general relationship nature of the extraction to the acidity is the same as for the solutions containing  $\text{Li}^+$ . In extracting the nickel, an investigation of the nickel distribution between the TBPh and the 9n  $\text{HCl}$ , at various concentrations of the nickel, showed that D-C- of this element under the given conditions hardly depends on its concentration within the range of  $10^{-4}$  to 1.5 n, and averages 0.003. A change in the concentration of the  $\text{HCl}$  from 4 to 11 n, hardly affects the D-C- of the nickel at all (when its concentration is 5 mg/ml). In separating the cobalt from the nickel by extraction, the method of semi-counterflow extraction was used, where the required conditions of the separation can be determined mathematically. Experimental values were compared to calculated ones. The cobalt distribution determined experimentally, corresponded well with the calculated fractions, based on the estimated D-C. The static method of extraction is said to be inconvenient for practical application, thus experiments were conducted for nickel and cobalt separation in an extraction apparatus (Figure 3) consisting of a reactor and four compartments for dynamic extraction (Ref. 12: N. E. Brezhneva, V. I. Levin, G. V. Korpusev, N. M. Man'ko,

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E. K. Bogacheva. II Mezhdunar. konfer. OON po primeneniyu atomnoy energii v mirnykh tselyakh, doklad No 2295). A product containing 95% Co of the initial amount was obtained. The content of the solid non-volatile residue in the product did not exceed 0.1 mg/mc. Co<sup>58</sup> was also extracted from irradiated Ni<sub>2</sub>O<sub>3</sub> and its radiochemical purity was investigated. The Co<sup>60</sup> determination was performed by means of a scintillation spectrometer taking into consideration the presence of gamma-lines having an energy of 1.6 Mev, when irradiating the Co<sup>58</sup>, and representing 0.5 % of the intensity of the 0.81 Mev gamma-line (Ref. 13: B. S. Dzhelepov, L. K. Peker, Skhemy raspada radioaktivnykh yader. Izd. AN SSSR, M.-L., 1958). In discussing the experimental results the authors point out that the main aim was to find the optimum conditions of Co<sup>58</sup> extraction and, thus, the investigations were not systematic. Certain conclusions are formed, however: The extracted TBPh chloride complexes of cobalt are said to be much more stable than the corresponding complexes of nickel. The iron complexes are even more stable, the D-C- of which, between the TBPh and the HCl reaches 10<sup>5</sup> (Ref. 14: H. Irving, D. N. Edgington, J. Inorg. Nucl. Chem. 10, 3/4, 306, 1959; Ref. 16: E. Bankmann, H. Specker, Z. Analyt. Chem., 162, 1. 18, 1958). The independence of the D-C- of the cobalt to the concentration of the latter, noted

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along a wide range of concentrations, points to the absence of polymer forms both in the organic as well as in the water phases. The nature of the extracted cobalt complex is said to be somewhat unclear to the authors, and although Irving and Edgington (Ref. 14) feel that  $\text{CoCl}_2 \cdot 2\text{TBF}$  is extracted, the authors of this article claim that nature of relationship of the cobalt extraction to the acidity, at a constant concentration of the chloride ions (Ref. 14, Figure 8) points to the possible presence of a hydrogen ion in the composition of the extracted compound. If it is assumed that the extraction of the Co takes place in the form of two compounds, for example,  $\text{CoCl}_2$  and  $\text{H}_2\text{CoCl}_2$ , then with a growth in the acidity (at a constant concentration of the chloride ions) first, it is thought, a decrease of the extraction can take place, due to a drop of the concentration of the free TBF, bound by the extracting HCl. Then with a further growth of the acidity, the formation of  $\text{H}_2\text{CoCl}_4$  begins to take precedence, the extraction of which would cause an increase of the D-C-, which, it is thought, is noticed during the experiment, although not always in the same way. No explanation has been found as to why the extraction of the Co decreases when the  $\text{Li}^+$  ions are replaced in the solution by  $\text{Ni}^{2+}$  ions, and further investigations of this system are recommended. The authors state that

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although the suggested method of Co<sup>58</sup> extraction gives sufficient purity, other variations such as Co extraction at a lowered acidity, can be used at high chloride concentration conducting the process in a concentrated NiCl<sub>2</sub> solution and (or) adding to it calcium chloride or magnesium chloride. The advantage of this variation would be the possibility of decreasing the volumes of the extract and reextract due to an increase in the D-C- of the cobalt at low acidity. There are 5 figures, 1 table, 16 references: 3 Soviet-bloc and 13 non-Soviet-bloc. The four recent English language publications read as follows: R.S. Rochlin, Nucleonics, 17, 1, 54, 1959; H. Irving, D. N. Edgington, J. Inorg. Nucl. Chem., 10 3/4, 306, 1959; D. F. C. Morris, C. F. Bell, J. Inorg. Nucl. Chem., 10, 3/4, 336, 1959; C. E. Mellich, J. A. Payne, R. L. Otlet, UNESCO. Internat. Confer. radioisotopes in sci. res. Paper, 189, Paris, 1957.

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S/058/61/000/007/009/086  
A001/A101

AUTHORS: Levin, V.I., Golutvina, M.M.

TITLE: Production of  $As^{77}$  without a carrier from germanium irradiated by neutrons

PERIODICAL: Referativnyy zhurnal. Fizika, no. 7, 1961, 47, abstract 7B118 (V sb. "Metody polucheniya i izmereniya radioakt. preparatov", Moscow, Atomizdat, 1960, 64 - 76)

TEXT: The authors developed a method of separation of  $As^{77}$  ( $T_1 = 38.7$  hrs;  $E_{\beta \max} = 0.69$  Mev (97.5%); 0.44 Mev (2%) and 0.17 Mev (0.5%) free of a carrier. The  $As^{77}$  isotope is obtained as the product of decay of  $Ge^{77}$  and  $Ge^{77m}$  which are produced from  $Ge^{76}$  by its irradiation with slow neutrons. The method of separation is based on extraction by organic solvents (carbon tetrachloride, chloroform, etc.).

A.M.

[Abstracter's note: Complete translation]

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S/081/62/000/006/015/117  
B166/B101

AUTHORS: Golutvina, M. M., Levin, V. I., Tikhomirova, Ye. A.  
TITLE: Production of arsenic-77 without a carrier from neutron-irradiated germanium  
PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 40, abstract 6B256 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii. V. 2. Tashkent, AN UzSSR, 1960, 402-407)

TEXT: A technique is described for separating  $As^{77}$  without a carrier from germanium irradiated by thermal neutrons. The irradiated specimen was dissolved at 90-100°C in HCl with an addition of  $H_2O_2$ ; when this was done, the As was oxidized to  $As^{5+}$ . From an 8-9 M solution in HCl the  $Ge^{4+}$  was extracted with  $CCl_4$ , and the  $As^{5+}$  remained in aqueous solution. The  $As^{5+}$  was then reduced with NaI to  $As^{3+}$  and also extracted. The authors give a graph showing the distribution factor of  $As^{3+}$  and  $Ge^{4+}$  when extracting with  $CCl_4$  as a function of HCl concentration. The radiochemical purity of the

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